CLAIMS

1. A method for transmitting data over a channel, comprising:

receiving a first datagram for transmission at a first priority;

receiving a second datagram for transmission at a second priority, higher than the first priority, before the transmission of the first datagram is completed;

responsive to receiving the second datagram, deciding to divide the first datagram into a plurality of fragments, including a first fragment and a last fragment;

transmitting the fragments of the first datagram over the channel, beginning with the first fragment; and

transmitting at least a fragment of the second datagram over the channel before transmitting the last fragment of the first datagram.

2. A method according to claim 1, wherein receiving the first and second datagrams comprises receiving Internet Protocol (IP) packets.

3. A method according to claim 1, wherein transmitting the fragments comprises distributing the fragments for transmission over a plurality of parallel physical links.

4. A method according to claim 3, wherein the plurality of parallel physical links are arranged so as to constitute a single logical channel.

5. A method according to claim 3, and comprising receiving the fragments of the first and second datagrams at a receiver connected to the plurality of parallel physical links, and reassembling the datagrams from the fragments at the receiver.

6. A method according to claim 5, wherein transmitting the fragments comprises adding an indication to the fragments that transmission of the fragments of the first datagram was interrupted by transmission of the second datagram, and wherein reassembling the datagrams comprises reassembling the packets responsive to the indication.

7. A method according to claim 6, wherein reassembling the datagrams comprises detecting loss of a fragment of one of the datagrams on one of the links, and discarding other fragments received at the receiver responsive to the indication.

8. A method according to claim 1, wherein transmitting at least the fragment of the second datagram comprises dividing the second datagram into multiple fragments for transmission over the channel.

9. A method according to claim 8, wherein transmitting at least the fragment of the second datagram comprises interrupting transmission of the fragments of the first datagram until all fragments of the second datagram have been transmitted over the channel.

10. A method according to claim 8, wherein transmitting at least the fragment of the second datagram comprises interspersing transmission of the fragments of the first datagram with one or more fragments of the second datagram, subject to the first and second priorities.

11. A method according to claim 8, wherein the multiple fragments of the second diagram comprise first and last fragments, and wherein the method comprises:

receiving a third datagram for transmission at a third priority, higher than the second priority, before

the last fragment of the second datagram has been transmitted; and

transmitting at least a fragment of the third datagram over the channel before transmitting the last fragment of the second datagram.

12. A method according to claim 11, wherein transmitting the at least one fragment of the third datagram comprises transmitting the at least one fragment of the third datagram before transmitting the last fragment of the first datagram.

13. A method according to claim 1, wherein transmitting at least the fragment of the second datagram comprises interrupting transmission of a number of datagrams, including at least the first datagram, in order to transmit at least the fragment of the second datagram, and adding a field to the fragment indicating the number of datagrams whose transmission has been interrupted.

14. A method according to claim 13, and comprising receiving the fragments of the first and second datagrams at a receiver connected to the channel, and reassembling the datagrams from the fragments responsive to the field indicating the number.

15. A method according to claim 14, wherein reassembling the datagrams comprises detecting loss of a fragment having a given value of the number indicated by the field, and discarding other fragments received at the receiver with the given value of the number indicated by the field.

16. Apparatus for transmitting data over a channel, comprising:

a transmitter, coupled to receive first and second datagrams for transmission over the channel at respective first and second priorities, wherein the second priority is higher than the first priority, and the transmitter receives the second packet before the transmission of the first packet is completed, and adapted, responsive to receiving the second packet, to decide to divide the first datagram into a plurality of fragments, including a first fragment and a last fragment, and to transmit the fragments of the first datagram over the channel, beginning with the first fragment, and to transmit at least a fragment of the second datagram over the channel before transmitting the last fragment of the first datagram; and

a receiver, adapted to receive the fragments of the datagrams over the channel and to reassemble the fragments so as to reconstruct the first and second datagrams.

17. Apparatus according to claim 16, wherein the datagrams comprise Internet Protocol (IP) packets.

18. Apparatus according to claim 16, wherein the channel comprises a plurality of parallel physical links, and wherein the transmitter is adapted to distribute the fragments for transmission over the plurality of physical links, and the receiver is coupled to the plurality of physical links so as to receive the fragments thereon.

19. Apparatus according to claim 18, wherein the plurality of parallel physical links are arranged so as to constitute a single logical channel.

20. Apparatus according to claim 18, wherein the transmitter is adapted to add an indication to the fragments that transmission of the fragments of the first

datagram was interrupted by transmission of the second datagram, and the receiver is adapted to reassemble the packets responsive to the indication.

21. Apparatus according to claim 20, wherein the receiver is adapted to detect a loss of a fragment of one of the datagrams on one of the links, and to discard other fragments that it receives responsive to the indication.

22. Apparatus according to claim 16, wherein the transmitter is adapted to divide the second datagram into multiple fragments for transmission over the channel.

23. Apparatus according to claim 22, wherein the transmitter is configured to interrupt transmission of the fragments of the first datagram until it has transmitted all of the fragments of the second datagram over the channel.

24. Apparatus according to claim 22, wherein the transmitter is configured to intersperse transmission of the fragments of the first datagram with the fragments of the second datagram, subject to the first and second priorities.

25. Apparatus according to claim 22, wherein the multiple fragments of the second diagram comprise first and last fragments, and wherein the transmitter is further adapted to receive a third datagram for transmission at a third priority, higher than the second priority, before the last fragment of the second datagram has been transmitted, and to transmit at least a fragment of the third datagram over the channel before transmitting the last fragment of the second datagram.

26. Apparatus according to claim 25, wherein the transmitter is adapted to transmit at least the fragment of the third datagram before transmitting the last fragment of the first datagram.

27. Apparatus according to claim 16, wherein the transmitter is adapted to interrupt transmission of a number of datagrams, including at least the first datagram, in order to transmit at least the fragment of the second datagram, and to add a field to the fragment indicating the number of datagrams whose transmission has been interrupted.

28. Apparatus according to claim 27, wherein the receiver is adapted to reassemble the datagrams from the fragments responsive to the field indicating the number.

29. Apparatus according to claim 28, wherein the receiver is adapted to detect loss of a fragment having a given value of the number indicated by the field, and to discard other fragments with the given value of the number indicated by the field.